

**1**

**I. Invasive diagnostic tests:**

- **Specimens:** gastric biopsy obtained by endoscopy.

**1. Rapid biopsy urease test:** in-vitro test for urease activity (bed side test).

**2. Histopathology & Microscopy:** *H. pylori* organisms appear as short spiral or S- shaped rods.

**II- Non-invasive tests:**

- These tests do not require endoscopy & are used for initial screening.

**a) Fecal antigen test:**

Detection of *H. pylori* antigens in feces is useful in diagnosis and treatment follow up.

**II- Non-invasive tests:**

**b) Urea breath test:** in-vivo test for urease activity

- **<sup>13</sup>C- or <sup>14</sup>C-labeled urea** is ingested by the patient.

**Serological tests:** The presence of IgG antibodies in the patient's serum can also be used as evidence of infection (of limited use).

**2**

**Rotavirus**

---Double-layered protein coat

Wheel shape appearance under EM

**Most common cause of infantile gastroenteritis**

**A -Three main symptoms of rotavirus infection:**

- Abdominal pain
- Vomiting
- Severe watery diarrhea

**B - Complications**

Dehydration & electrolyte imbalance

**Norwalk virus**

**Mode of transmission :**

Ingestion of contaminated sea food or water.

**Astroviruses**  
a star in shape.